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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/690,710	10/22/2003	Scott H. Gillis	14072-024001 / W 602	9757

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EXAMINER	
PAK, JOHN D	

ART UNIT	PAPER NUMBER
1616	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/690,710	GILLIS ET AL.	
	Examiner	Art Unit	
	JOHN PAK	1616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 April 2007 and 20 June 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *103-112,115-133,135,137 and 138* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *103-112,115-133,135,137 and 138* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *1/07*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Claims 103-112, 115-133, 135, 137-138 are pending in this application.

The terminal disclaimer filed on 6/20/2007 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of U.S. Patent No. 6,989,157 has been reviewed and is accepted. The terminal disclaimer has been recorded.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 103-112, 115-133, 135, 137-138 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for treating existing respiratory conditions of microbial etiology (e.g. sinusitis with colloidal silver; bacterial/microbial, fungal, viral respiratory condition with antimicrobial, atomically disordered nanocrystalline silver) in a subject, does not reasonably provide enablement for the full scope of "prophylactically treating" such respiratory conditions. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims.

The Examiner interprets "prophylactically treating" to include "preventing." Applicant defines "prophylactically treating" as involving "reducing the likelihood that the condition will occur in a subject" (specification page 1, lines 18-20). Such definition

necessarily encompasses preventing a condition, as evidenced by specification page 13, line 24. Prevention includes the scope wherein contracting "the condition" is made impossible[1].

The scope of applicant's subjects is extremely broad. Specification page 9 discloses human, dog, cat, horse, reptile, amphibian, fish, turtle, rodent, cow, chicken, turkey, ostrich, sheep.

The scope of applicant's prophylactically treating a respiratory condition is extremely broad. The prophylactically treatable or treated respiratory condition is open to any microbial etiology. Such respiratory conditions include bronchitis, tuberculosis, pneumonia, sinusitis, rhinitis, pharyngitis, mucositis, stomatitis (paragraph bridging specification pages 10-11). Other conditions readily come to mind, including the common cold, anthrax, etc.

The scope of preventing is not only broad but also poorly defined. For example, what is the duration of the prophylactic effect? The claims merely recite contacting with the active agent and reduction of the occurrence. Does nanocrystalline silver provide prevention of the common cold for 1 day, 2 days, 1 week, 1 month? Same for prevention of rhinitis, pneumonia, anthrax infection.

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[1] See definition of "prevent" in Webster's New World Dictionary, 2nd college edition, page 1127 (1972).

The state of the prior art is such that preventing, reducing the likelihood, and treating all such different conditions have not yet been realized with any drug or drugs, let alone with the same drug or drug types.

Medline abstract 2001156341 states, "Antimicrobial drugs do not prevent pneumonia." **Medline abstract 2001495140** discloses clinical practice guidelines, which state, "no recommendations are made about the use of prophylactic antimicrobials ... for prevention and treatment of acute bacterial sinusitis." **Medline abstract 89068222** discloses silver nitrate and erythromycin to be ineffective in preventing nasopharyngeal carriage and neonatal chlamydial pneumonia. **HCAPLUS abstract 1962:56564** discloses that introduction of silver nitrate into the pulmonary arterial circuit causes pulmonary edema. **HCAPLUS abstract 1961:60892** similarly discloses silver nitrate to provoke pulmonary edema.

As evidenced above, the level of unpredictability in the art is quite high – one skilled in the art would not have expected silver-containing material, nanocrystalline or otherwise, to prevent all the various microbial respiratory conditions for undefined duration of time.

The amount of direction provided by the instant specification is quite lacking. The specification merely provides a laundry list of metal compounds and conditions to be prophylactically treated. There is not one single piece of objective evidence related to prophylactically treating a respiratory condition, as claimed. Specification Examples

III-XX and XXVI-XXVIII state prophetic examples of providing various forms of "antimicrobial, atomically disordered, nanocrystalline-silver containing material" to a human subject who does not have nosocomial pneumonia or ventilator associated pneumonia. Specification Examples XXIX-XXXI state prophetic examples of intubating an unspecified adult male animal to treat an unspecified respiratory condition. No objective evidence or result of prevention or treatment is disclosed.

Given the scope of widely divergent microbial respiratory conditions that are readable on the claims, many of which are not known to be prevented to the broad extent the instant claims read on, the quantity of experimentation needed to use the invention to the full extent claimed, based on the content of the disclosure, would be serious and undue. Based on the totality of the above discussed factors, one skilled in the art would be faced with undue experimentation in order to practice the instant invention to the full extent claimed.

Applicant's arguments relative hereto, filed on 4/13/2007, have been given due consideration, but they were deemed unpersuasive. Applicant argues that the nanocrystalline metal-containing material can reduce the occurrence of the microbial respiratory condition at the prophylactically treated area of the subject by reducing the presence at the contacted area of the subject of one or more pathogens of the condition that can move from the first area of the subject to the second area of the subject. Applicant argues that the skilled person in the art would understand the detailed

mechanism by which prophylaxis can occur from the specification disclosure and the numerous prophetic examples.

The Examiner cannot agree. Even though there may be an expectation at first blush that contact with an antimicrobial substance may have a preventing effect, Medline abstract 2001156341, Medline abstract 2001495140 and Medline abstract 89068222 provide contrary evidence. These references clearly show that many microbial respiratory conditions cannot be prevented or are not expected to be prevented with substances that have antimicrobial activity. Moreover, HCAPLUS abstract 1962:56564 and HCAPLUS abstract 1961:60892 disclose silver nitrate to provoke pulmonary edema, so the skilled person in the art would understand that there is substantial unpredictability involved when preventing microbial respiratory conditions with silver-containing material.

Of course applicant is correct in stating that actual reduction to practice prior to filing is not per se required in all circumstances, but absence of the same is nonetheless one piece of evidence for determining the issue of adequate enabling support, along with the breadth of the claims, nature of the invention, state of the prior art, level of one of ordinary skill, level of unpredictability in the art, amount of direction provided by the inventor, existence of working examples, and quantity of experimentation needed to make or use the invention based on the content of the disclosure. Here, all such factors have been fully considered and weighed, and the conclusion is that one skilled in the art

would be faced with undue experimentation to obtain a method of prophylactically treating microbial respiratory conditions, as presently claimed.

Claims 103-112, 115-133, 135 and 137-138 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

First, it is noted that there is no actual reduction to practice disclosed in the specification with respect to any microbial respiratory condition and any silver-containing material.

Second, the claims read on preventing (including making impossible) any microbial respiratory condition for unspecified duration of time. The active agent is any nanocrystalline silver-containing material. There is no claim-defined nexus between timing of silver contacting step and duration of prophylactic effect.

Third, even though silver-containing materials would have been expected to possess antimicrobial properties, the state of the prior art as of the effective filing date of this application would have shown that many microbial respiratory conditions cannot be prevented even with antimicrobials. See Medline abstract 2001156341 (antimicrobials do not prevent pneumonia), Medline abstract 2001495140 (clinical practice guidance

does not recommend use of prophylactic antimicrobials for acute bacterial sinusitis) and Medline abstract 89068222 (silver nitrate and erythromycin not effective for preventing nasopharyngeal carriage and neonatal chlamydial pneumonia). Additional unpredictability is raised when the known pulmonary edema provoking effect of silver nitrate is taken into account. See HCAPLUS abstract 1962:56564 and HCAPLUS abstract 1961:60892. Clearly, there is no known correlation between silver antimicrobials, or any antimicrobials for that matter, and prevention of any and all microbial respiratory condition.

For these reasons, one skilled in the art would not have recognized that applicant was in possession of the full scope of the claimed invention at the time of the effective filing date of this application. The claims must therefore be rejected as lacking in adequate written description.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section

> 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 103-104, 106-107, 109, 111, 115-116, 119-121, 124, 127, 129-131, 133, 137-138 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 99/60999 (hereinafter WO '999).

WO '999 discloses application of agents with anti-inflammatory, antiseptic properties to the lower respiratory tract to treat infections[2] (page 1, lines 6-12; claim 22). Treatment of bronchitis, pneumonia and tuberculosis is disclosed (claim 43). Silver compound as the antiseptic agent is disclosed (page 5, line 7; claim 27). Spray, emulsion, dispersion, suspension or solution forms are disclosed (claim 39). Administration by nebulization agent loaded with aerosol is disclosed (page 6, line 22 to page 7, line 14; claims 38, 39, 41).

Although the cited reference does not expressly disclose silver compounds in nanocrystalline form, it is the Examiner's position that the claims are still met. It must be pointed out that a nanocrystalline feature is a solid-state feature, i.e. nanocrystalline state disappears when solvated. Here, applicant's claims read on the nanocrystalline materials that are in solution or in solvents (see claim 103 in light of claims 116-120, 124), so the nanocrystalline characteristics would no longer be present when in solution in solvents. Disclosure of WO '999 is therefore applicable with respect to

[2] The Examiner is not relying on "preventing" infections disclosure in this reference, e.g. claim 22 and page 1, line 11.

nanocrystalline silver-containing compounds, because such compounds would be indistinguishable from non-nanocrystalline silver-containing compounds in solution or in solvents.

It is the Examiner's position that aerosol inhalation taught by WO '999 meets applicant's claimed feature of contacting a first area to reduce the occurrence of the condition at a second area. For example, treating pneumonia (WO '999, claim 43) by inhaling an aerosol necessarily contacts the oral or nasal cavity and then subsequently contacts other areas of the respiratory system. Treating a subject with pneumonia necessarily involves recognition of 100% possibility of occurrence of pneumonia in the lower respiratory tract of the subject. A silver compound must comprise atoms. As for the "prophylactic ratio" in applicant's claim 133, it is the Examiner's position that since the same substance is administered to the same patient via the same delivery protocol, the same result would necessarily be obtained.

The claims are thereby anticipated.

Applicant's argument relative hereto is based on the position that the cited reference does not disclose or suggest nanocrystalline silver-containing material. Applicant's arguments are found unpersuasive for the reasons of claim interpretation stated above.

Claims 103-104, 106-107, 109-111, 116, 119, 121, 124, 127, 129, 131, 133 are rejected under 35 U.S.C. 102(b) as being anticipated by Derwent abstract 1994-089981.

Derwent abstract 1994-089981 discloses the use of activated electrolytic silver water in the inhalatory treatment of tuberculosis.

Although the cited reference does not expressly disclose silver compounds in nanocrystalline form, it must be pointed out that a nanocrystalline feature is a solid-state feature, i.e. nanocrystalline state disappears when solvated. Here, applicant's claims read on the nanocrystalline materials that are in solution or in solvents (see claim 103 in light of claims 116-120, 124), so the nanocrystalline characteristics would no longer be present when in solution in solvents. Disclosure of the cited reference is therefore applicable with respect to nanocrystalline silver-containing materials, because such compounds would be indistinguishable from non-nanocrystalline silver-containing materials in solution or in solvents.

It is the Examiner's position that the inhalation of the electrolyzed silver water solution taught by the cited reference meets applicant's claimed feature of contacting a first area to reduce the occurrence of the condition at a second area. Inhaling contacts the oral or nasal cavity and then subsequently contacts other areas of the respiratory system. Inhaling the solution necessarily encompasses a spray. Treating a subject with tuberculosis necessarily involves recognition of 100% possibility of occurrence of tuberculosis in an area that is not the mouth or nose. Electrolyzed silver water

comprises ionic species and certainly includes atoms. As for the "prophylactic ratio" in applicant's claim 133, it is the Examiner's position that since the same substance is administered to the same patient via the same delivery protocol, the same result would necessarily be obtained. The claims are thereby anticipated.

Applicant's argument relative hereto is based on the position that the cited reference does not disclose or suggest nanocrystalline silver-containing material. Applicant's arguments are found unpersuasive for the reasons of claim interpretation stated above.

Claims 103-104, 106-107, 109, 111, 116, 121, 124, 131, 133 are rejected under 35 U.S.C. 102(e) as being anticipated by Quillin (US 6,899,903).

At the outset, it is noted that Quillin claims benefit of provisional application 60/391,022, filed on 6/25/2002. Disclosure made in the provisional application renders Quillin prior art under 35 USC 102(e).

Quillin discloses treating sinusitis with a solution that contains, inter alia, water and colloidal silver (see columns 5-6 and claim 1; see also provisional application page 1, paragraph 1). The solution is sprayed into the nasal cavity (claim 1; see provisional application, page 1, last paragraph).

Claim interpretation of the nanocrystalline feature has already been discussed several times in preceding grounds of rejection, and the discussions there are incorporated herein by reference.

Treating the sinus with intranasal spray necessarily involves contacting a first area (nasal cavity) to treat a second area (sinuses), where there is recognition of the 100% possibility of sinusitis in said second area. As for the "prophylactic ratio" in applicant's claim 133, it is the Examiner's position that since the same substance is administered to the same patient via the same delivery protocol, the same result would necessarily be obtained.

The claims are thereby anticipated. Applicant's argument relative hereto is based on the position that the cited reference does not disclose or suggest nanocrystalline silver-containing material. Applicant's arguments are found unpersuasive for the reasons of claim interpretation stated above.

Claims 103-104, 106, 109, 111, 116-124, 127-129, 131, 133, 138 are rejected under 35 U.S.C. 102(a) or (e) as being anticipated by Frank (US 6,454,754).

Frank discloses delivering 20-60 ppm colloidal silver suspension via nebulizer, aerosol or spray atomizer to combat infections of the lungs such as bronchitis, chest colds, tuberculosis and sinus infection (claims 1, 4; and column 3, lines 23-55). It is noted that 20 ppm and 60 ppm are 0.002 w/w% and 0.006 w/w%, respectively.

Inhalation through the nose is disclosed to overcome severe sinus infections (column 3, lines 52-55).

Claim interpretation of the nanocrystalline feature has already been discussed several times in preceding grounds of rejection, and the discussions there are incorporated herein by reference.

It is the Examiner's position that Frank's delivery protocol meets applicant's claimed feature of contacting a first area to reduce the occurrence of the condition at a second area. Nasal inhalation to treat sinus infection is disclosed; and further, delivery via nebulizer, aerosol or spray atomizer necessarily contacts multiple areas before reaching the end target area. Treating a subject with sinus infection, bronchitis or tuberculosis necessarily involves recognition of 100% possibility of occurrence of such conditions in the subject. A silver compound must comprise atoms. As for the "prophylactic ratio" in applicant's claim 133, it is the Examiner's position that since the same substance is administered to the same patient via the same delivery protocol, the same result would necessarily be obtained.

The claims are thereby anticipated. Applicant's argument relative hereto is based on the position that the cited reference does not disclose or suggest nanocrystalline silver-containing material. Applicant's arguments are found unpersuasive for the reasons of claim interpretation stated above.

Claims 103-104, 106-112, 116-127, 129, 131, 133, 138 are rejected under 35 U.S.C. 102(e) as being anticipated by Burrell et al. (US 7,087,249).

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Burrell et al. claim a method of reducing inflammation or infection of a mucosal membrane, including nasal, pulmonary, trachea and pharynx airways (claims 1 and 3-4). The inflamed or infected area is contacted with a therapeutically effective amount of antimicrobial metals in nanocrystalline form, which is characterized by sufficient atomic disorder so that the metal, in contact with an alcohol or water-based electrolyte, releases atoms, ions, molecules or clusters of the metal on a sustainable basis (claim 1). Delivery in the form of a powder, aerosol, spray, mist to the oral cavity or to an area of the nasal, bronchial, pulmonary, trachea or pharynx airways to treat a respiratory disorder is claimed (claims 8-11). 40-500 µg/ml concentration is claimed, which is equivalent to 0.4 w/v% for 40 µg/ml (see claim 9).

Contacting a first area to reduce the occurrence of the condition at a second area is clearly encompassed by Burrell's claims. Burrell's delivery of a powder or aerosol via

the oral cavity or nasal airways (claims 8-11) would plainly meet this feature when treating a respiratory disorder. Treating inflammation or infection of pulmonary airways would necessarily entail recognition of 100% possibility of occurrence of the inflammation or infection at an area different from the oral or nasal airways. As for the "prophylactic ratio" in applicant's claim 133, it is the Examiner's position that since the same substance is administered to the same patient via the same delivery protocol, the same result would necessarily be obtained. The claims are thereby anticipated.

Applicant argues that Burrell et al. do not disclose prophylactically treating a condition with a nanocrystalline silver-containing material. The Examiner maintains that since Burrell et al. teach the same substance administered to the same patient via the same delivery protocol, the same result (to the extent possible) would necessarily be obtained.

All claims are rejected. No claim is allowed.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to JOHN PAK whose telephone number is **(571)272-0620.** The Examiner can normally be reached on Monday to Friday from 8 AM to 4:30 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's SPE, Johann Richter, can be reached on **(571)272-0646**.

The fax phone number for the organization where this application or proceeding is assigned is **(571)273-8300**.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571)272-1600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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